UNCLASSIFIED

Stancard Form 295 Per 2-89

REPORT DO	MENTATION	PAGE	_ 0	rm Approved MB No. 0704-0188
or reporting bursen for bus collection of informationing and communicating and maintaining the data mended, and commiscion of information, including supportions for religions of information, including supportions for re	ton it stumuted to everage 1 hour pletting and reviewing the collection during this Burden, 10 Washington	per reasons, including the time of affermation. Send consider included Processing Seniors. Director	of the reviewing imprinciples of the Burden of the Burden On the Burden of the Burden On the Burden of the Burden	ons, searching estime data sources expenses or ear other separt of the tratrong and hosping, 1215 settlemen techniques, DC 29503.
AGENCY USE ONLY (Leave blank)	2. REPORT DATE 7/13/94	3. REPORT TYPE	chnical, 6/	VERED 1/92-5/31/94
TITLE AND SUBTITLE	1,722,721			G NUMBERS
Plan Debugging Using Approximate Domain Theories			G: F49620-92-J-0268	
AUTHOR(S)		-		
r. Matthew Ginsberg, Pro	ject Scientist			
PERFORMING ORGANIZATION NAME	(S) AND ADDRESS(ES)		S. PERFOR	MING ORGANIZATION NUMBER
Computer Science Department			OFC	SD-TR
Stanford University				
Stanford, CA 94305-2140			96-0020	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)			10. SPONS AGENC	ORING/MONITORING Y REPORT NUMBER
AFOSR/NM				
Bidg. 410 Bolling AFB DC 20332-6448!				
Olling 2				
NOVES				•
1. SUPPLEMENTARY NOTES				
	·			
128. DISTRIBUTION/AVAILABILITY STATEMENT			125. DIST	RIBUTION CODE
		unlimited		
Approved for public release	gae; diatiloution	0.1.1.1.00		
			Ì	
3. ABSTRACT (Maximum 200 words)				-
3. ASSTRACT (Mazinialis eve des es				
		·		
		•		
				•
10000000 011			DEC CTAIR	777 mm.
19960202	'		to a market	A THEBECIED I
IOOOOFOL	. VII			
	•			113. NUMBER OF PAGES
14. SUBJECT TERMS				
				16. PRICE CODE
		ALON TAN SEPTIMITY	CLASSIFICATION	20. LIMITATION OF ABS
17. SECURITY CLASSIFICATION 1	8. SECURITY CLASSIFICA	TION 19. SECONITE	ACT	1
OF REPORT	OF THIS PAGE	UNCLASSI		UNLIMITED

7/13/94

Annual technical report 6/1/92-5/31/94 Air Force grant no. F49620-92-J-0268 Prof. Nils Nilsson, Principal Investigator

Progress made by students supported under this award:

Roy: Not supported because focus of research irrelevant to parent project (replaced with Harvey).

Holbrook: Not supported because changed from AI to systems (replaced with Menlove).

Geddis: Mr. Geddis has been investigating the use of caching as a mechanism for the control of reasoning. Ideally, one would like to be able to cache both successful and failing subgoals, and then retrieve these answers should the subgoal reappear in the proof tree. This idea is quite difficult to make complete, however, because the appearance of goal-goal resolutions in proof search spaces means that the answer to a particular cached query may be dependent not only on the query but on its position in the search space. Mr. Geddis has shown that in a wide variety of cases, the correctness of the overall algorithm is independent of this difficulty. This work forms the core of his Ph.D. dissertation, which he is expected to finish in late 1994.

Harvey: Mr. Harvey has developed two new techniques for searching large spaces. ITERATIVE BROADENING is an idea that applies to systematic search and an article describing it has appeared in the AI Journal. MULTIPROBE is a novel nonsystematic search technique that has performed very well in preliminary experiments on scheduling problems. He is expected to receive his Ph.D. in mid 1995.

Menlove: Mr. Menlove is a Master's student who was supported by this award during the final year of his master's program. He ported the graphical interface to the MVL system to CLIM, the Common Lisp Interface Manager. MVL's graphical interface has been central in helping us to understand the control issues arising in real-time and anytime planning and reasoning, and this understanding has been key in the development of the approximate planning paradigm.

Darwiche: Dr. Darwiche completed his thesis work in 1993. The work, supported by this AASERT award, involved the development of a symbolic generalization of probability theory. This generalization retains the desirable computational properties of probabilistic methods, and Darwiche used it to construct a generalization of Bayes networks that could be applied to first-order logic, nonmonotonic reasoning and assumption-based truth maintenance systems.

Jonsson: Mr. Jonsson has been involved with the experimental evaluation of competing search methodologies. He has conducted experiments in a variety of domains including scheduling, and the results were reported at a AAAI Spring Symposium on AI & NP-Hard problems in 1993.